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United States Patent

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*J. Todd Johnson*

Acting Commissioner of Patents and Trademarks

*Pamela Morton*

Attest



US005944617A

# United States Patent [19] Falone et al.

[11] Patent Number: 5,944,617  
[45] Date of Patent: \*Aug. 31, 1999

## [54] VIBRATION ABSORBING MATERIAL FOR HANDLES OF SPORTING EQUIPMENT

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[\*] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.: 08/868,357

[22] Filed: Jun. 3, 1997

### Related U.S. Application Data

[63] Continuation-in-part of application No. 08/560,699, Nov. 20, 1995, Pat. No. 5,653,643.

[51] Int. Cl.<sup>6</sup> ..... A63B 53/14

[52] U.S. Cl. .... 473/300; 473/523; 473/549;  
473/568; 473/316

[58] Field of Search ..... 473/316, 321,  
473/300, 303, 523, 549, 568

### [56] References Cited

#### U.S. PATENT DOCUMENTS

1,195,994 8/1916 Lard ..... 473/316  
1,551,203 8/1925 Mills ..... 473/322  
1,620,118 3/1927 Matern .  
2,871,899 2/1959 Coyle ..... 81/177.1  
3,353,981 11/1967 Jacob .  
3,606,326 9/1971 Sparks et al. .  
3,716,433 2/1973 Plummer ..... 156/85  
4,143,109 3/1979 Stockum .  
4,147,443 4/1979 Skobel .  
4,197,611 4/1980 Bell et al. .  
4,261,367 4/1981 Uffindell .  
4,268,574 5/1981 Peocenini et al. .  
4,338,270 7/1982 Uffindell .  
4,417,042 11/1983 Dziark .  
4,483,972 11/1984 Mitchell .  
4,552,713 11/1985 Cavicchioli .  
4,591,160 5/1986 Piragino .

4,597,578 7/1986 Lancaster .  
4,613,537 9/1986 Krupper .  
4,660,832 4/1987 Shomo .  
4,819,939 4/1989 Kobayashi ..... 473/299  
4,948,131 8/1990 Nakamishi .  
4,953,862 9/1990 Uke et al. .  
5,042,804 8/1991 Uke et al. .  
5,088,734 2/1992 Glava .  
5,110,653 5/1992 Landi .  
5,122,405 6/1992 Landi .  
5,137,769 8/1992 Landi .  
5,193,246 3/1993 Huang .  
5,199,706 4/1993 Chen .  
5,203,561 4/1993 Lancot .  
5,240,247 8/1993 Didier .  
5,254,391 10/1993 Davis .  
5,258,088 11/1993 Wu .  
5,261,665 11/1993 Downey .  
5,267,487 12/1993 Falco et al. .

(List continued on next page.)

### OTHER PUBLICATIONS

*American Journal of Physics*, vol. 38, No. 5 (May 1970).  
"On the Dynamics of the Swing of a Golf Club".

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### [57] ABSTRACT

A hand held article, such as a golf club, includes an elongated handle with an inner support structure mounted to the handle and a vibration absorbing material mounted around the inner support structure. The inner support structure includes a plurality of spaced rigid projections which extend into the vibration absorbing material to a location inwardly of the outer surface of the vibration absorbing material. In one embodiment the inner support structure is integral with the shaft of the handle. In another embodiment a sleeve is heat shrunk onto the shaft and the inner support structure and vibration absorbing material are mounted over the sleeve.

27 Claims, 3 Drawing Sheets

